

WE CLAIM:

1. A system for inspecting a specimen, comprising:
 - a light energy source;
 - a multiple element arrangement for receiving light energy
 - 5 from said light energy source;
 - a lensing/imaging arrangement for receiving light energy
 - from said multiple element arrangement and imparting said light
 - energy to said specimen;
 - a pinhole mask for receiving light energy reflected from
 - 10 said specimen through said lensing arrangement and selectively
 - passing said reflected light energy; and
 - a time delay and integration charge coupled device for
 - receiving light energy from said pinhole mask.
- 15 2. The system of claim 1, wherein said light source comprises
- a multiple wavelength laser and said multiple element arrangement
- comprises a fly lens array.
3. The system of claim 1, wherein said light source comprises
- 20 an arc lamp and said multiple element arrangement comprises a
- pinhole array.
4. The system of claim 1, wherein said light energy source
- comprises a laser and said system further comprises a beam
- 25 expander which receives light energy from said laser and expands
- light energy toward said multiple element arrangement.
5. The system of claim 2, wherein said fly lens arrangement
- comprises a plurality of offset individual lenses.
- 30 6. The system of claim 5, wherein said fly lens arrangement is
- substantially aligned with respect to the pinhole mask.
7. The system of claim 1, wherein said lensing/imaging
- 35 arrangement comprises:
- a first lens;

a transmitter/reflector;
an objective; and
a tube lens.

5 8. The system of claim 1, wherein said lensing/imaging
arrangement comprises autofocus capability.

9. The system of claim 1, wherein said pinhole mask is mounted
adjacent to said time delay and integration charge coupled
10 device.

10. The system of claim 8, further comprising a focusing lens,
wherein said focusing lens receives light energy from said
pinhole mask and focuses light energy onto said time delay and
15 integration charge coupled device.

11. The system of claim 1, wherein said light energy source
comprises a multiple wavelength slit laser.

12. A specimen inspection system, comprising:
a light energy source;
a multiple element arrangement for receiving energy from
said energy source and selectively passing the light energy
received;
25 a lensing arrangement comprising an autofocus system for
measuring and cancelling topographical variations during
inspection; and
a pinhole mask for filtering light energy received from
said lensing arrangement.

30 13. The specimen inspection system of claim 12, wherein said
lensing arrangement receives light energy from said multiple
element arrangement and imparts light energy onto a specimen.

14. The specimen inspection system of claim 13, wherein said lensing arrangement further transmits light energy reflected from said specimen to said pinhole mask.

5 15. The specimen inspection system of claim 12, wherein said light energy source comprises a laser and said multiple element arrangement comprises a fly lens array.

10 16. The specimen inspection system of claim 12, wherein said light energy source comprises an arc lamp and said multiple element arrangement comprises a pinhole array.

15 17. The specimen inspection system of claim 12, wherein said light energy source comprises a laser and said system further comprises a beam expander which receives light energy from said laser and expands light energy toward said multiple element arrangement.

20 18. The specimen inspection system of claim 13, wherein said fly lens arrangement comprises a plurality of offset individual lenses.

25 19. The specimen inspection system of claim 15, wherein said fly lens arrangement is substantially aligned with respect to the pinhole mask.

20. The specimen inspection system of claim 12, wherein said lensing arrangement comprises:

- 30 a first lens;
- a transmitter/reflector;
- an objective; and
- a tube lens.

35 21. The specimen inspection system of claim 12, further comprising a time delay and integration charge coupled device for receiving light energy from said pinhole mask.

22. The specimen inspection system of claim 12, wherein said pinhole mask is mounted adjacent to a time delay and integration charge coupled device.

23. The specimen inspection system of claim 21, further comprising a focusing lens, wherein said focusing lens receives light energy from said pinhole mask and focuses light energy onto said time delay and integration charge coupled device.

24. A system for inspecting a semiconductor wafer specimen, comprising:

illumination means for generating light energy;

multiple element passing means for selectively filtering and passing energy received from said illumination means;

lensing means for imparting light energy onto said semiconductor wafer specimen;

masking means for further selectively filtering and passing energy received from said lensing means; and

a time delay and integration charged coupled device for receiving light energy from said masking means.

25. The system of claim 24, further comprising autofocus means for measuring and cancelling topographical variations during inspection, said autofocus means operating on said lensing means.

26. The system of claim 24, wherein said illumination means comprises a laser and said multiple element passing means comprises a fly lens array.

27. The system of claim 24, wherein said illumination means comprises an arc lamp and said multiple element passing means comprises a pinhole array.

28. The system of claim 24, wherein said illumination means comprises a laser and said system further comprises a beam

expander which receives light energy from said laser and expands light energy toward said multiple element passing means.

29. The system of claim 26, wherein said fly lens arrangement
5 comprises a plurality of offset individual lenses.

283 30. The system of claim 30, wherein said fly lens arrangement
is substantially aligned with respect to the pinhole mask.

10 31. The system of claim 24, wherein said lensing means comprises:

- a first lens;
- transmitter/reflector means;
- an objective; and
- 15 a tube lens.

284 32. A method for inspecting a specimen, comprising the steps
of:
20 generating light energy;
selectively filtering and passing energy received from said
illumination means using a multiple element arrangement;
imparting light energy onto said specimen;
further selectively filtering and passing energy reflected
from said specimen; and
25 performing a time delay and integration sensing function on
light energy received from said further selectively filtering
step.

30 33. The method of claim 32, further comprising the step of
automatically focusing the light energy in said selectively
filtering step, wherein said automatic focusing comprises
measuring and cancelling topographical variations during
selective filtering.